THAT WHICH IS CLAIMED IS:

1. An isolated polynucleotide encoding the $\sigma_{1\beta}$ receptor, said polynucleotide selected from the group consisting of:

(a) polynucleotides having the nucleotide sequence of **SEQ ID NO:1**;

(b) polynucleotides that hybridize to DNA of (a) above under stringent conditions and which encode $\sigma_{1\beta}$; and

(c) polynucleotides that differ from the DNA of (a) or (b) above due to the degeneracy of the genetic code, and that encode $\sigma_{1\beta}$ encoded by a DNA of (a) or (b) above.

2. An isolated polynucleotide according to Claim1 that encodes the $\sigma_{1\beta}$ receptor

3. An isolated polynucleotide according to Claim 1 that encodes $\sigma_{1\beta}$ having the amino acid sequence given herein as **SEQ ID NO:2**.

4. An isolated polynucleotide according to Claim1 which is a DNA having the nucleotide sequence given herein as **SEQ ID NO:1**.

5. An expression vector comprising a nucleic acid according to Claim 1.

6. A cell comprising an expression vector according to Claim 5.

7. A cell comprising an expression vector according to Claim 6 and capable of expressing $\sigma_{1\beta}$.

8. An isolated protein encoded by a polynucleotide according to Claim 1.

9. An isolated protein encoded by a polynucleotide of Claim 1 that has the amino acid sequence given herein as **SEQ ID NO:2**.

10. An antibody which specifically binds to a protein encoded by a polynucleotide according to Claim 1.

11. A method for producing a protein comprising the amino acid sequence of **SEQ ID NO:2**, or a fragment thereof, comprising

(a) culturing a host cell containing an expression vector containing at least a fragment of the polynucleotide sequence encoding $\sigma_{1\beta}$ under conditions suitable for the expression of the protein; and

(b) recovering the protein from the host cell culture.

12. A method for detecting a polynucleotide which encodes $\sigma_{1\beta}$ in a biological sample comprising:

(a) hybridizing the complement of the polynucleotide sequence which encodes **SEQ ID NO:1** to nucleic acid material of a biological sample, thereby forming a hybridization complex; and

b) detecting the hybridization complex, wherein the presence of the complex correlates with the presence of a polynucleotide encoding $\sigma_{1\beta}$ in the biological sample.

13. An isolated polynucleotide encoding $\sigma_{1\beta}$, said polynucleotide selected from the group consisting of:

(a) polynucleotides having the nucleotide sequence of **SEQ ID NO:3**;

(b) polynucleotides that hybridize to polynucleotides of (a) above under stringent conditions and which encode $\sigma_{1\beta}$; and

(c) polynucleotides that differ from the polynucleotides of (a) or (b) above due to the degeneracy of the genetic code, and that encode $\sigma_{1\beta}$ encoded by a polynucleotides of (a) or (b) above.

14. An isolated polynucleotide according to Claim 13 that encodes $\sigma_{1\beta}$.

15. An isolated polynucleotide according to Claim 13 that encodes $\sigma_{1\beta}$ having the amino acid sequence given herein as **SEQ ID NO:4**.

16. An isolated polynucleotide according to Claim13 which is a DNA having the nucleotide sequence given herein as **SEQ ID NO:3**.

17. An expression vector comprising a nucleic acid according to Claim 13.

18. A cell containing an expression vector according to Claim 17.

19. A cell containing an expression vector according to Claim 17 and capable of expressing $\sigma_{1\beta}$.

20. An isolated protein encoded by a polynucleotide according to Claim 13.

21. An isolated protein encoded by a polynucleotide according to Claim 13 that has the amino acid sequence given herein as **SEQ ID NO:4**.

22. An antibody which specifically binds to a protein encoded by a polynucleotide according to Claim 13.

23. A method for producing a protein comprising the amino acid sequence of **SEQ ID NO:4**, or a fragment thereof, comprising

(a) culturing a host cell containing an expression vector containing at least a fragment of the polynucleotide sequence encoding $\sigma_{1\beta}$ under conditions suitable for the expression of the protein; and

(b) recovering the protein from the host cell culture.

24. A method for detecting a polynucleotide which encodes $\sigma_{1\beta}$ in a biological sample comprising:

(a) hybridizing the complement of the polynucleotide sequence which encodes **SEQ ID NO:3** to nucleic acid material of a biological sample to form a hybridization complex; and

b) detecting the hybridization complex, wherein the presence of the complex correlates with the presence of a polynucleotide encoding $\sigma_{1\beta}$ in the biological sample.

25. A method for screening for a ligand capable of binding to a $\sigma_{1\beta}$ receptor, said method comprising:

a) combining the $\sigma_{1\beta}$ receptor and a candidate compound; and

b) determining the binding of said candidate compound to said $\sigma_{1\beta}$ protein, wherein binding of the candidate compound to the $\sigma_{1\beta}$ receptor indicates that the candidate compound is a ligand for the $\sigma_{1\beta}$ receptor.

26. The method according to Claim 25, wherein the candidate is an organic molecule.

27. The method according to Claim 25, wherein the $\sigma_{1\beta}$ receptor has the sequence set forth in **SEQ ID NO:2**.

28. The method according to Claim 25, wherein the $\sigma_{1\beta}$ receptor has the sequence set forth in **SEQ ID NO:4**.

29. A method for screening for a ligand capable of binding to a $\sigma_{1\beta}$ receptor, said method comprising:

(a) providing a $\sigma_{1\beta}$ receptor by (i) transfecting a host cell with a polynucleotide that encodes the lymphocyte receptor polypeptide having an amino acid sequence selected from the group consisting of **SEQ ID NO: 2** and **SEQ ID NO: 4**, and (ii) maintaining said transformed cell under biological conditions sufficient for translation of said nucleotide sequence so as to express the $\sigma_{1\beta}$ receptor polypeptide;

b) combining a candidate compound with the $\sigma_{1\beta}$ receptor set forth in (a); and then

(c) determining the binding of said candidate compound to said $\sigma_{1\beta}$ protein, wherein binding of the candidate compound to the $\sigma_{1\beta}$ receptor indicates that the candidate compound is a ligand for the $\sigma_{1\beta}$ receptor.

30. The method according to Claim 29, wherein step (a) is carried out by (i) transfecting a host cell with a nucleotide sequence selected from the group consisting of **SEQ ID NO:1** and **SEQ ID NO:3** to form a transformed cell that encodes a $\sigma_{1\beta}$ receptor polypeptide, and (ii) maintaining said transformed cell under biological conditions sufficient for translation of said nucleotide sequence so as to express the $\sigma_{1\beta}$ receptor polypeptide.

31. A method for determining the proliferative status of cancer cells that express σ_1 receptors and $\sigma_{1\beta}$ receptors, comprising:

(a) contacting the cells with a detectably labeled σ_1 receptor ligand and a detectably labeled $\sigma_{1\beta}$ receptor ligand, and

(b) determining the extent to which the ligands bind to the cells, wherein the extent provides a measure of the proliferative status of the cell.

32. A method for determining the proliferative status of cancer cells that express σ_1 receptors and $\sigma_{1\beta}$ receptors, comprising:

determining the density of σ_1 receptors and $\sigma_{1\beta}$ receptors of the cell, wherein density is measured by the amount of binding of σ_1 receptor ligands to σ_1 receptors and the amount of binding of $\sigma_{1\beta}$ receptor ligands to $\sigma_{1\beta}$ receptors; and then

comparing the density of $\sigma_{1\beta}$ receptors to the density of σ_1 receptors of the cell, wherein a higher density of $\sigma_{1\beta}$ receptors as compared to σ_1 receptors indicates that the cancer cells are in a proliferative state.